



## DEPARTMENT OF HEALTH AND HUMAN SERVICES

### National Institutes of Health

#### Government-Owned Inventions; Availability for Licensing

**AGENCY:** National Institutes of Health, HHS.

**ACTION:** Notice.

**SUMMARY:** The invention listed below is owned by an agency of the U.S.

Government and is available for licensing to achieve expeditious commercialization of results of federally-funded research and development. Foreign patent applications are filed on selected inventions to extend market coverage for companies and may also be available for licensing.

**FOR FURTHER INFORMATION CONTACT:** Elizabeth Pitts, Ph.D., 240-669-5299; [elizabeth.pitts@nih.gov](mailto:elizabeth.pitts@nih.gov). Licensing information and copies of the patent applications listed below may be obtained by communicating with the indicated licensing contact at the Technology Transfer and Intellectual Property Office, National Institute of Allergy and Infectious Diseases, 5601 Fishers Lane, Rockville, MD, 20852; tel. 301-496-2644. A signed Confidential Disclosure Agreement will be required to receive copies of unpublished information related to the invention.

**SUPPLEMENTARY INFORMATION:** Technology description follows.

#### Polyvalent Influenza Virus-Like Particles (VLPs) and Use as Vaccines

##### Description of Technology:

Influenza virus is a major public health concern, causing up to 500,000 deaths annually. The current strategy of reformulating vaccines annually against dominant circulating strains leads to variable protective efficacy and is unlikely to protect against novel influenza viruses with pandemic potential. Thus, there is a great need for a vaccine that provides “universal” protection against influenza viruses.

This technology relates to a broadly protective, universal influenza vaccine candidate composed of a mixture of virus-like particles (VLPs) expressing the hemagglutinin protein or the neuraminidase protein from influenza virus strains belonging to different virus subtypes. Vaccinating animals with a mixture of VLPs expressing four or more hemagglutinin subtypes provides broad and heterosubtypic protection against lethal challenge with influenza virus strains in both mice and ferrets. This vaccine technology has great potential to provide protection against both annual epidemic and pandemic-potential influenza viruses.

This technology is available for licensing for commercial development in accordance with 35 U.S.C. § 209 and 37 CFR Part 404.

**Potential Commercial Applications:**

- Vaccines against influenza virus
- Universal influenza virus vaccine

**Competitive Advantages:**

- Broad/universal protection against both seasonal and pandemic-potential influenza viruses
- Does not require yearly reformulation as is necessary with current commercially available influenza vaccines

**Development Stage:**

- In vivo data assessment (animal)

**Inventors:** Jeffery Taubenberger (NIAID).

**Intellectual Property:** HHS Reference No. E-195-2014 – U.S. Provisional Application No. 62/014,814, filed June 20, 2014; PCT Application No. PCT/US2015/029843, filed May 8, 2015; U.S. Patent No. 10,130,700, issued November 20, 2018; European Application No. #15724151.4, filed May 8, 2015 (pending); Chinese Application No.

201580037799.4, filed May 8, 2015 (pending); and Indian Application No.

201617043281, filed May 8, 2015 (pending).

**Licensing Contact:** To license this technology, please contact Elizabeth Pitts, Ph.D.,  
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